



Transforming Electricity Delivery in Florida

Located in northern Florida, and bordering on the Gulf of Mexico, Talquin Electric Cooperative's (TEC) service territory spans four counties and covers about 2,600 square miles. TEC's "SmartGrid Program" has a total budget of \$16.2 million (including \$8.1 million of federal cost-sharing through the U.S. Department of Energy's (DOE) Smart Grid Investment Grant (SGIG) program) and deploys advanced metering infrastructure to approximately 56,000 customers and upgrades 46 of 86 circuits with advanced capacitors and switches for voltage control and better outage management.

From their inception in 1940 until recently, TEC's customers read their own meters and reported their monthly usage by recording the meter reading on the portion of the bill returned with payment or by phoning the meter reading into an office. As a result, each year TEC wrote-off hundreds of thousands of dollars in revenue shortfalls from misreporting, levels far in excess of industry averages. According to Jeremy Nelms, TEC's Director of Engineering, "We paid utility bills at TEC on the honor system. To strengthen our finances we needed to replace an aging system that for 70 years required our members to submit their own electric readings each month."

Timing is everything. While considering alternatives, it was the SGIG program that provided a catalyst for action. Mr. Nelms says that SGIG funds accelerated TEC's grid modernization plans by at least five years. With equipment installations almost complete, TEC's SGIG project is beginning to produce benefits.

Transforming Electricity Delivery at TEC

"With a customer-read 'honors system,' there was simply no way to ensure accurate billing and our ability to control tampering and theft was minimal," says Mr. Nelms. "Compounding that, we were rolling trucks for routine service connections and disconnections about 6,000 times a year, and almost 9,000 times a year for non-payment problems." At about \$40-50 per truck roll, this adds up to a significant annual expense.

With the new metering system in place, Mr. Nelms says TEC avoided more than 16,000 8,800 truck rolls from October, in 2011 to September, 2012 for non-payment problems and service connections, saving TEC and its customers more than \$640350,000, not to mention reductions in pollution from fewer miles driven by TEC crews.



TEC technician changes-out an analog meter with a smart meter at a customer home.

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In addition, TEC expects to avoid an additional 5,500 truck rolls per year for routine service connections with additional annual savings of more than \$200,000. With the new system, service connections can be provided to new customers in a matter of minutes instead of hours or even days. In addition, costs for delinquent accounts fell by more than \$230,000. TEC employees have benefitted from these changes as well. With new training in information technology, career technicians are gaining new skills and are able to move into more challenging and higher paying positions.

With these savings and improvements in metering, billing, and customer services, SGIG funding gives TEC the ability to explore other features for improving power delivery such as outage management and new electricity rate programs, including pre-payment plans. Better outage management is essential for TEC because summer weather patterns off of the Gulf include daily thunderstorms that are frequently accompanied by violent winds that can cause outages over wide areas.

Before SGIG funding, TEC identified the general vicinity for outage locations based on the pattern of customer phone calls they received. Waiting for customers to call was time consuming and labor intensive and occupied staff who might otherwise be more directly involved in service restoration efforts. Today, data coming in from the advanced meters pinpoint outage locations so repair crews can be dispatched to precisely where they are needed. This automatic data reporting speeds restoration times and shortens outage durations. In addition, TEC is able to compile meter data and track progress in service restoration. They can keep customers closely informed about progress and when to expect the power to be back on.

Education and Training for a Smooth Transition

Achieving these benefits for TEC customers involves careful planning to think through the steps for a smooth transition from customer readings to state-of-the-art automatic readings. The key to TEC's success involved an extensive education and training campaign for both customers and employees. As a result, complaints were kept to a minimum and TEC's workers emerged as the company's best "ambassadors for change."

According to a 30 year veteran customer of TEC, "When I learned TEC was investing in an upgraded meter system, I became quite excited. As a coop, this type of upgrade is good for everyone. What is good for the coop is good for me and my neighbors. TEC is indeed stepping into the 21st century."

The campaign's effectiveness involved TEC envisioning the customer experience with the new meters and bills. TEC employees were provided an "elevator speech" that they were asked to memorize about



TEC spokesperson displays new meters at a community event.

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TEC's new smart grid programs and plans. TEC focused on two potential sources for customer complaints: meter change-outs and bill true-ups.

For meter change-outs, TEC alerted customers as to when, who, and how change-outs would be accomplished. To anticipate potential concerns, TEC materials – including door-hangers, brochures, town meetings, radio spots, newsletters, and bill stuffers – used the term “TEC-meter” rather than “smart meter,” with positive effects. In addition, meter installers made site improvements where necessary so that homeowners would be pleased with the appearance.

Billing true-ups were a concern since many customers could face large payments to make up for inaccurate customer-read bills. TEC offered a staggered payment plan and opened toll-free hotlines to answer questions and address concerns.

Grid Modernization Improvements to Come

The TEC project also includes distribution system upgrades. For example, new automated capacitors enable TEC to better manage voltage and power factor levels and save money. At headquarters, TEC's distribution control center has the capability to send signals remotely to operate capacitor banks on substations and feeder lines to optimize power flows and lower power delivery costs.

During peak periods, it is possible to reduce voltages in ways that do not affect customers but which reduce TEC's overall requirements for purchasing electricity. For example, TEC recently reduced voltage levels at a single substation during a winter peak event and saved \$12,000 in demand charges from their wholesale electricity provider. Mr. Eugene Kanikovsky, Director of Finance, believes it is possible to save as much as \$84,000 a month when these techniques are deployed across TEC's service territory.



TEC's new electric distribution operations control center.

Another opportunity for further grid modernization involves extension of TEC's new microwave communications system for expanded automation of utility services in the area covered by TEC's microwave umbrella. There are several municipal utilities in towns that are in or adjacent to TEC's footprint. TEC plans to make available its SGIG-enabled communications system so that these communities can automate electricity and water metering in their service territories.

Because of SGIG funding, TEC was able to “leap frog” typical grid modernization schedules. TEC replaced its antiquated system with state-of-the-art technologies that would not have otherwise been in their current investment plans. In the process, the company is saving money, improving reliability, and is well-

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positioned for further improvements. According to Bill May, TEC's Director of Cooperative Initiatives, "While we have made great strides for our customers by improving the way we do business and using information technologies cost effectively for lower costs and better reliability, the best is still to come."

Learn More

The American Recovery and Reinvestment Act of 2009 provided DOE with \$4.5 billion to fund projects that modernize the Nation's electricity infrastructure. For more information visit www.smartgrid.gov or www.oe.energy.gov. There are five recent reports available for download:

- *Smart Grid Investment Grant Progress Report, July 2012*
- *Demand Reductions from the Application of Advanced Metering Infrastructure, Time-Based Rates, and Customer Systems – Initial Results, December 2012*
- *Operations and Maintenance Savings from the Application of Advanced Metering Infrastructure – Initial Results, December 2012*
- *Reliability Improvements from the Application of Distribution Automation Technologies and Systems – Initial Results, December 2012*
- *Application of Automated Controls for Voltage and Reactive Power Management – Initial Results, December 2012*